

I claim:

1. An agent comprising:
5 a light chain component comprising a light chain or
a fragment thereof of a botulinum toxin, a butyricum
toxin, a tetani toxin or variants thereof,
10 a translocation component comprising a heavy chain
or a modified heavy chain of a botulinum toxin, a
butyricum toxin, a tetani toxin or variants thereof, and
15 a targeting component which selectively binds to a
GnRH receptor.
2. The agent according to claim 1 wherein the
light chain component decreases the release of a hormone
15 from a cell.
3. The agent according to claim 1 wherein the
light chain component comprises a light chain or a
fragment thereof of a ~~botulinum~~ toxin type A, B, C₁, D, E,
20 F, G or variants thereof.
4. The agent according to claim 1 wherein the
light chain component comprises a light chain of a
~~botulinum~~ toxin type A.
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5. The agent according to claim 1 wherein the
translocation component facilitates the transfer of at
least the light chain component into the cytoplasm of a
cell.
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6. The agent according to claim 1 wherein the
translocation component comprises a heavy chain or a
modified heavy chain of a ~~botulinum~~ toxin type A, B, C₁,
D, E, F, G or variants thereof.
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7. The agent according to claim 1

wherein the translocation component comprises a heavy chain or a modified heavy chain of a *botulinum* toxin type A.

5 8. The agent according to claim 1 wherein the modified heavy chain comprises at least an amino terminal fragment of a heavy chain.

10 9. The agent according to claim 1 wherein the targeting component comprises an amino acid component.

15 10. The agent according to claim 9 wherein the amino acid component comprises a variable region of an antibody which will selectively bind a GnRH receptor.

15 11. The agent according to claim 9 wherein the amino acid component comprises a peptide.

20 12. The agent according to claim 11 wherein the peptide comprises the sequence:

pyroGlu-His-Trp-Ser-Tyr-X-Leu-Arg-Pro-Z

25 wherein X is an amino acid selected from the group consisting of glycine, lysine, D-lysine, ornithine, D-ornithine, glutamic acid, D-glutamic acid, aspartic acid, D-aspartic acid, cysteine, D-cysteine, tyrosine and D-tyrosine; and Z is a substituent selected from the group consisting of Gly-NH₂, ethylamide, and Aza-Gly-NH₂.

30 13. The agent according to claim 12 wherein X is D-Lys and Z is ethylamide.

35 14. The agent according to claim 11 wherein the peptide comprises at least 5 consecutive amino acids of an amino acid sequence:

pyroGlu-His-Trp-Ser-Tyr-X-Leu-Arg-Pro-Z

wherein X is an amino acid selected from the group
5 consisting of glycine, lysine, D-lysine, ornithine, D-
ornithine, glutamic acid, D-glutamic acid, aspartic acid,
D-aspartic acid, cysteine, D-cysteine, tyrosine and D-
tyrosine; and Z is a substituent selected from the group
consisting of Gly-NH₂, ethylamide, and Aza-Gly-NH₂.

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15. The agent according to claim 14 wherein the peptide comprises at least 6 consecutive amino acids of the amino acid sequence.

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16. The agent according to claim 14 wherein the peptide comprises at least 7 consecutive amino acids of the amino acid sequence.

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17. The agent according to claim 14 comprising at least 8 consecutive amino acids of the amino acid sequence.

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18. The agent according to claim 1 wherein the light chain component, the translocation component and the targeting component are attached to each other by a linker.

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19. The agent according to claim 12 wherein the light chain component is a light chain of a *botulinum* toxin type A, the translocation component is an amino terminal fragment of a heavy chain of a *botulinum* toxin type A which can facilitate the translocation of at least the light chain into a cytoplasm of a cell, and the targeting component is: PyroGlu-His-Trp-Ser-Tyr-D-Lys-
35 Leu-Arg-Pro-ethylamide.

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20. The agent according to claim 1 attached to a facilitator component, the facilitator component is effective to facilitate transferring the agent across a blood brain barrier.

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21. The agent according to claim 1 useful for treating a gonadotrophin related illness in a mammal, including a human.

10 22. A method for treating a gonadotrophin related illness in a mammal, said method comprises the step of administering to the mammal a therapeutically effective amount of an agent, the agent comprises:

15 a light chain component comprising a light chain, or a fragment thereof, of a botulimum toxin, a butyricum toxin, a tetani toxin or variants thereof,

a translocation component comprising a heavy chain, or a modified heavy chain, of a botulimum toxin, a butyricum toxin, a tetani toxin or variants thereof and

20 a targeting component, wherein the targeting component selectively binds to a GnRH receptor.

23. The method according to claim 22 wherein the gonadotrophin related illness is selected from the group consisting of breast cancer, prostate cancer, pancreatic cancer, endometriosis, endometrial cancer, and precocious puberty.

24. A method for treating prococious puberty in a 30 human, said method comprises the step of administering to the mammal a therapeutically effective amount of an agent, the agent comprises:

a light chain component comprising a light chain or a fragment thereof of a botulimum toxin, a butyricum toxin, a tetani toxin or variants thereof,

35 a translocation component comprising a

heavy chain or a modified heavy chain of a botulimum toxin, a butyricum toxin, a tetani toxin or variants thereof and

5 a targeting component, wherein the targeting component selectively binds to a GnRH receptor.

25. A method for treating endometriosis in a human, said method comprises:

10 a light chain component comprising a light chain, or a fragment thereof, of a botulimum toxin, a butyricum toxin, a tetani toxin or variants thereof,

 a translocation component comprising a heavy chain, or a modified heavy chain, of a botulimum toxin, a butyricum toxin, a tetani toxin or variants thereof and

15 a targeting component, wherein the targeting component selectively binds to a GnRH receptor.